

Application Number: 10/520,924
Office Action Dated: January 29, 2007
Response Dated: April 30, 2007

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REMARKS

The examiner alleges that claims 1 to 15 are obvious in view of United States Patent 5,086,854 to Roussy. The examiner also alleges that claims 16 to 18 are anticipated by United States Patent 5,086,854 to Roussy.

In response to the above allegations, the applicant respectfully submits that claims 1 to 15 are not obvious in view of Roussy, and claims 1 to 16 are not anticipated by Roussy.

Claims 1 to 15 are directed to a drill string for a rotary-vibratory drill comprising a plurality of drill pipes and a method for connecting the drill pipes wherein the slots are non-parallel to the longitudinal axis of the drill pipe. As the examiner correctly points out, United States Patent 5,086,854 to Roussy does not disclose slots which are parallel to the longitudinal axis of the drill pipe. Use of slots which are parallel to the longitudinal axis of the drill pipe allows the drilling assembly to have more slots which can be shorter than the slots found in the prior art. This helps reduce the alternating stresses caused by the oscillations of the drill string. In effect there are more slots to share the load than in the prior art using the V pattern as disclosed in United States Patent 5,086,854 to Roussy. Please see paragraph [0029] of the instant application in this regard.

Analysis has shown that with the V-shaped slots, as disclosed in United States Patent 5,086,854 to Roussy, as the weld puddle at the bottom of the V-shaped slot cools it shrinks and causes high tensile stresses at this location. When the pipe is then vibrated, cracks form around these weld puddles. Eventually the cracks start to propagate until they meet each other and the pipe fails completely. If this happens in a deep hole, then the length of pipe below the fracture point is lost at considerable expense. Please see paragraphs [0008] and [0009] of the instant application in this regard. The applicant therefore submits the modifications to the slots claimed in the instant application results

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in a functional significance that presents an unexpected result beyond what has been taught in the prior art.

In view of the above, the applicant respectfully requests that the Examiner withdraw the objection to claims 1 to 15.

Regard claims 16 to 18, the applicant has amended claim 16 to recite: *the slots being parallel to the longitudinal axis*. The applicant submits that having slots parallel to the longitudinal axis of the drill pipe allows the welds to be peened. The peening expands the metal the metal which reduces the tensile stress. This allows the drilling assembly to have more slots which can be shorter than the slots found in the prior art. This helps reduce the alternating stresses caused by the oscillations. In effect there are more slots to share the load than in the prior art using the V pattern. Please see paragraph [0029] of the instant application in this regard. The applicant submits that the wording *the slots being parallel to the longitudinal axis* and the fact that the welds are peened, as claimed in amended claim 16 and claims 17 and 18 dependent thereon, distinguishes over United States Patent 5,086,854 to Roussy.

In view of the above, the applicant respectfully requests that the Examiner withdraw the objection to claims 16 to 18.

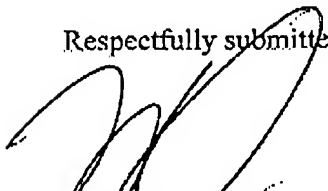
In light of the above-mentioned corrections, the applicant respectfully submits that the application is now in order for allowance.

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Respectfully submitted,

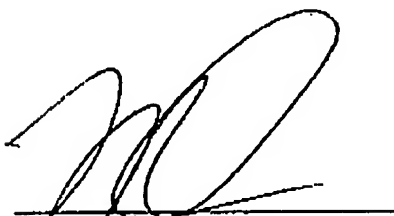


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Date